

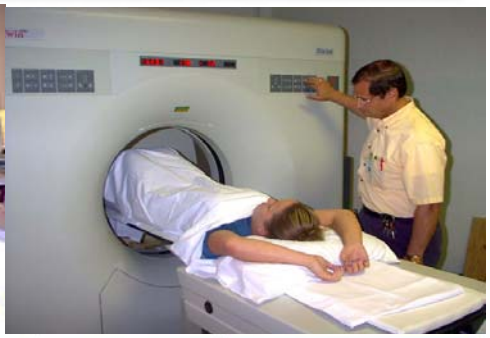
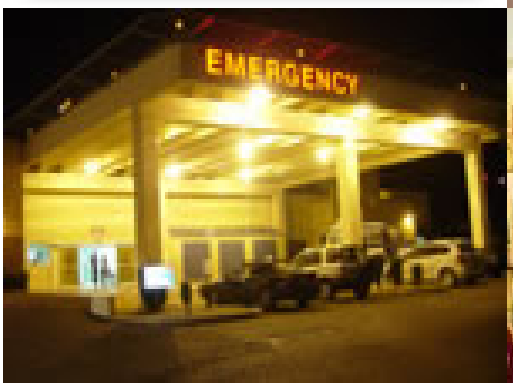

# ARCHIE

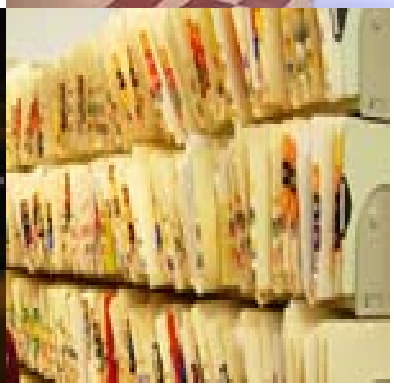
## Arizona Rural Community Health Information Exchange










# RURAL HEALTH CARE PILOT PROGRAM

## Federal Communication Commission
## (WC Docket No. 02-60)

## ARIZONA RURAL COMMUNITY HEALTH INFORMATION EXCHANGE

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## CONTENTS 1

## EXECUTIVE SUMMARY

The Pit, the Cross, and the Chile. Welcome to Cochise County, Arizona.

*The Pit, the Cross, and the Chile* are landmarks in the service area covered by county health providers and agencies. Rich in human history and natural splendor, the depressed economic environment along the US-Mexico border has created a vulnerable population with multiple barriers to healthcare. In the center of Bisbee is the lavender *Pit*, the magnificent giant hole created by mining copper ore. Bisbee, once the largest rail stop between St. Louis and San Francisco, now has over thirty five percent of its population living on less than 200% of the federal poverty limit [FPL]. Douglas and surrounding areas sitting directly on the international border, struggle daily with the illegal *Cross*ing of over 40,000 people from Agua Prieta, Mexico. Agua Prieta has an official population of 43,000 and an unofficial populace of more than 100,000, the difference being non-residents waiting for an opportunity to *cross* the border. There were 365,000 immigration arrests in Cochise County in 2005, and Border Patrol estimates only 1 in 10 crossers are apprehended. Then there are the Elfrida farmers living in the heart of the fertile Sulphur Springs Valley, hustling to survive with a limited supply of farm workers to harvest their *Chile* and other crops.

The Pit, the Cross, and the Chile are familiar sights to Edward W, Maria G, and Lydia P. They are, or were, residents of Cochise County, Arizona and we know them as our healthcare clients. Their stories highlight the issues the Arizona Rural Community Health Information Exchange [ARCHIE] is addressing. ARCHIE grew out of a county collaboration of healthcare organizations, including educational facilities, EMS agencies, and social services groups, which has been operational since 2001. This coalition will deploy a regional dedicated broadband healthcare network, and connect that network to neighboring, state, and federal networks, including Internet2.

Cochise County is one of the poorest in Arizona, with low economic, educational, and employment indicators such as 40.8% of residents live below 200% of the FPL (the US average is 30.1%). Many health and economic indicators are even more striking in specific areas of the county, than the county averages signify. For example, in Willcox the population with no high school diploma is 28.3%, in Douglas it is 45.1%.

These are not just statistics to the members of ARCHIE. The numbers represent the healthcare clients we work with everyday. Lydia P was one of those living below 100% of the FLP. Her 14 children are among those youth without medical and dental coverage.

ARCHIE members are working in partnership to develop a strategy to address these healthcare issues. The approach demonstrates how the regional healthcare model can be improved and fully utilized by establishing a robust telecommunication network that will expand existing telemedicine programs, improve educational information, and transmit clients' healthcare data to those involved in the continuum of care throughout Cochise County. The strategy ARCHIE has chosen is consistent with state guidelines [Arizona Health-e], federal goals, and lessons learned by other networks deploying such systems. This network is aggregating the specific needs of healthcare providers and

consumers, and leveraging existing resources to provide an efficient, cost effective, and sustainable means of connection and telecommunication.

The current healthcare providers in Cochise County are unable to effectively treat patients due to the lack of electronic data capabilities. The current limitations are:

- Inadequate network infrastructure
- Very limited network resources
- Fragmented data environments
- Inaccessible or difficult to use existing manual mechanisms
- Manual patient referral and transfer processes
- Inequitable access to existing telemedicine programs
- Individual facility versus regional network architecture

Cochise County would like to automate the sharing of health information by connecting and exchanging individual and population health data via a stable, secure, and scalable network infrastructure. ARCHIE proposes to:

- Develop a regional network infrastructure that is shared among participating facilities
- Enable data access from any facility at any time
- Consolidate and centralize core technical resources for county efficiencies
- Expand existing telemedicine capabilities to all regional facilities
- Introduce telehealth capabilities to exchange electronic data
- Automate patient referral and transfer processes
- Facilitate connecting existing electronic clinical information

ARCHIE's objectives comprise:

- Aligned with state and federal roadmaps
- Phased, incremental, and manageable implementation
- Using purchased hardware & software tools that are augmented for our business needs
- Negotiating collectively to obtain reduced costs

Project monitoring will include process evaluation, seeing that project steps are implemented in a timely and cost-effective manner, as well as outcome evaluation, ensuring that project goals and objectives are met. Metrics identified include:

- Easy to install and maintain infrastructure
- Reliable uptime of entire network
- Increased physician adoption of electronic applications
- Increased number of local providers with access to telemedicine applications
- Improved ease of communication during emergency and disaster relief efforts
- Enhanced surveillance of disease outbreaks and epidemics
- Decreased adverse events attributable to prescribing errors
- Decreased number of laboratory and imaging studies by eliminating redundant testing
- Reduced unnecessary hospitalizations and procedures

The project will be a phased implementation over three years with a 3-year total cost of $ 6,640,511. The initial funding will be grants and member allocated funds with ongoing sustainability covered by membership subscriptions, transaction fees, new memberships, and ongoing investment.

The ‘pipe’ is just not as thick in rural areas of this country, although large geographical distances with small population centers can most gain from the telemedicine and telehealth applications that ARCHIE will provide through this newly created dedicated broadband health network. Our proposal outlines an incremental affordable approach in deployment of broadband network and services. It is an innovative model that fully utilizes the infrastructure for health education, research, national security, surveillance, and clinical health applications.

**APPLICANT and SERVICE AREA**

Sierra Vista Regional Health Center [SVRHC] is the legally and financially responsible organization for the conduct of activities supported by this funding. SVRHC possesses the capacity and resources necessary to undertake and manage all activities proposed in cooperation with Network member organizations. Situated in rural Southeastern Arizona, Sierra Vista Regional Health Center is located in Cochise County's largest city (Sierra Vista population 40,430) and serves as the hub for the delivery of healthcare services to residents in every town in Cochise County.

Sierra Vista Regional Health Center is a non-profit regional medical center serving the entire county, and some neighboring areas. The health center is a secondary provider of healthcare services, hosting a medical staff comprising most of the county's specialists and sub-specialists. SVRHC offers a broad array of services including a cardiac catheterization laboratory, imaging services, intensive care unit, a full emergency service department, and the only obstetrical services in the entire county. Many of the services SVRHC offers are available only at SVRHC if clients and their families want to obtain their care within Cochise County.

The physical location and contact information for SVRHC is:
Sierra Vista Regional Health Center
300 El Camino Real
Sierra Vista, AZ 85635
Contact: Margaret Hepburn, President and CEO
Telephone: 520-471-3003

With a population of 132,000, Cochise County covers more than 6,225 square miles (the size of Rhode Island and Connecticut combined). The county shares 84 miles of its border with Mexico, this international border is the focus of significant federal and private attention due to the high volume of illegal immigrants crossing at this stretch of the border. County health facilities provide medical care for this population as well as to its legal residents. The Latino population is 34% countywide. Serving this demographic creates its own unique challenges. This population as a whole has low educational attainment, low employment, a high degree of cultural and linguistic isolation, a significant black market economy, and a high percentage of non-automobile owners, which can be a tremendous barrier to access to healthcare in a large western geographical region with little public transportation.

Cochise County is one of the poorest in Arizona, with low economic indicators such as 17.7% residents living below 100% FPL (compared to the national average of 12.5%), 40.8% of residents are living below 200% of FPL (US is 30.1%), and a median income of $34,200 (versus $43,600 for the nation). Countywide, Medicare recipients are 13.6%, Medicaid [AHCCCS in Arizona] enrollment is 20.4%, and children without dental coverage are 23%. Health resources for this rural population are few, yet the healthcare needs are great.

SVRHC has been instrumental in the creation of a countywide health networking organization, Cochise Network Association [CNA]. In 2001, members of the county's healthcare community came together to begin working co-operatively, and to aggregate and leverage the use of health funding, professionals, and equipment that are in scarce supply in rural Arizona. As the largest medical facility in Cochise County, Sierra Vista Regional Health Center has adopted a key leadership role in the county's health network.

Project Administration

The members of ARCHIE have been working in partnership for nearly six years through the Cochise Network Association [CNA]. This organization will be the administrative, implementation, and monitoring entity, much as USAC is for the FCC's Rural Health Care Pilot Program. CNA will work closely with SVRHC (applicant organization) to ensure all legal and fiscal requirements, oversight, and reporting is achieved.

CNA is a local independent non-profit 501(c)(3) organization, formed to facilitate coordination of limited healthcare resources in the rural setting, and to improve the working relationships among the county's healthcare organizations. The Executive Director of CNA, J. Schourup, MD, MPH, has been with CNA since its inception. CNA is governed by a Board of Directors, with each member organization designating a representative to the Board (one vote per representative). The Cochise County health organizations in ARCHIE are CNA members, with the exception of two of our community hospitals. Working together over the past 5½ years has generated trust and a cooperative management strategy, which greatly enhances the current proposal.

Managing contractual relationships, prioritizing project schedules, choosing technology providers, and managing health care information security and privacy will be activities coordinated under this administrative body.

ARCHIE members and CNA will choose the appropriate specific objectives to track progress and success of this project. We have identified many important metrics that will be set up and monitored to ensure full utilization of the broadband network and improvement in the quality of healthcare experiences, such as:

- Easy to install and maintain infrastructure
- Reliable uptime of entire network
- Increased physician adoption of electronic applications
- Decreased adverse events attributable to prescribing errors
- Decreased number of laboratory and imaging studies by eliminating redundant testing
- Decreased administrative costs for faxes, copies, couriers, and mailed correspondence
- Decreased clinician time tracking records from other facilities and providers
- Reduced patient waiting time in all patient care settings
- Reduced unnecessary hospitalizations and procedures

## NETWORK GOALS & OBJECTIVES

Cochise Network Association, working collaboratively through its Board members, identified 4 key areas of focus during its first year (2001) in order to leverage personnel and expertise to address infrastructure inadequacies facing the Cochise County healthcare system. Information Technology [IT] was one of these four areas. CNA held its first IT Workshop in September 2002. An Information Technology Action Group [ITAG] was initiated in early 2004, and the ITAG has met every other month since that time. The ITAG has been distributing IT information to its members and mutually planning IT projects that enhance our rural health environment for the past three years. One of the primary goals of the ITAG has been to identify technical resources to assist in the formation and improvement of telecommunications infrastructure and tools. Working on a technical plan to facilitate the new network infrastructure, ITAG created the Arizona Rural Health Information Exchange [ARCHIE].

Creating ARCHIE in Cochise County satisfies 3 major goals for county healthcare providers;

1. an enhanced telemedicine network
2. telehealth applications particularly useful for rural areas
3. improved patient safety and access to care

The underlying infrastructure of a reliable telecommunications network with security, routing, and logging of services is paramount to facilitate these three goals.

Current telecom limitations include an inadequate network infrastructure. It took one of the county's clinics in Elfrida two years to obtain one T1 line. Telecom companies have been very reluctant to invest in infrastructure in an area with such low population density and requiring large geographical coverage. Cochise County also has low telecommunications literacy and skill levels among the general workforce. Specifically in healthcare, we find fragmented data environments, inaccessible or difficult to use existing manual mechanisms, inequitable access to existing telemedicine programs, and an individual facility versus regional network telecommunications architecture.

The proposed technical model identifies a medical grade network of fiber connections that link the healthcare entities into a hub topology utilizing router and security hardware. This centralized hub will be used to monitor line availability, routing of information, and to insure security and privacy. The hub will have auditing and logging capability that can be augmented by our choice of telecommunications network providers.

The Arizona Telemedicine Network is a large "network of networks" based at the University of Arizona, and managed by the Arizona Telemedicine Program [ATP]. ATP offers multidisciplinary telemedicine services, distance learning, informatics training, and telemedicine technology assessment capabilities to communities throughout Arizona, the sixth largest state in the United States in square miles. The Arizona Telemedicine Program is creating new paradigms for healthcare delivery over the information superhighway due to the large geographical area of Arizona. Unfortunately only three

health organizations in Cochise County are currently able to utilize this technology (Southeast Arizona Medical Center, SouthEastern Behavioral Health Services, and the health center at the state prison in Douglas). The remaining health care provider organizations in Cochise County have been unable to cover the high costs of connectivity, required hardware and software, and membership fees necessary to utilize the services available through the Arizona Telemedicine Program. Importantly, the, Cochise County healthcare organizations have identified a need to have Telemedicine connections with each other, rather than each entity connecting to the nearest Telemedicine hub in Tucson.

Our proposal seeks to minimize these obstacles to our full utilization of the Arizona Telemedicine Program through leveraging resources and developing a local hub in our county. The Telemedicine Program offers many advantages to its users, which local county organizations would like to avail themselves. Through the use of telemedicine services we will be able to gain increased access to medical education and research at the University of Arizona and other institutions. Health-e Arizona provides programs in disease prevention, public education, correctional telemedicine, children's healthcare and home health nursing. In addition, the Arizona Telemedicine Program has recently instituted innovative programs in home health care for patients with artificial hearts awaiting transplantation, patients requiring ostomy home-nursing services, and children in need of occupational and physical therapy. Telenursing services are being implemented as well. In Cochise County there is a particular need for telemedicine applications such as teletrauma and telestroke, providing specialty and sub-specialty consults to patients in areas where these services are currently unavailable, and the ability to coordinate a rapid response with our nearest metropolitan center (Tucson) in the event of a state or national crisis. Providing quick, reliable access to this type of information throughout the county is invaluable to its constituents.

Our telehealth needs revolve around connecting local healthcare organizations to each other for improved delivery of healthcare. We need a more robust telecommunication system for handling emergencies and disaster relief efforts. Currently the EMS agencies use radios, the rest of us are on cell phones and land lines. There are 25 EMS agencies in Cochise County (many are small volunteer departments) so we have a strong requirement for enhanced coordination utilizing a stable communications system with greater information security than we now are able to employ. With our location on an international border, our need for disease and accident surveillance, assessment of bioterrorism threats, and crisis response is great. Recently, a vigilante built a fort installation on the border near Douglas and then proceeded to inquire at Southeast Arizona Medical Center how much anti-snake venom they kept on hand, and how well equipped were they to handle multiple gun shot victims. Eventually the FBI & Border Patrol surrounded and closed off the ‘fort’ area for 2 days. Despite the extremely high potential for disaster (one law enforcement officer said they were expecting another Waco) there was zero communication between the only hospital within 30 miles and law enforcement agencies. Hospital management was not informed about the ongoing situation, and did know whether to increase staffing, blood supplies, or available transportation.

R. W. Bliss Army Health Center was not required to hold a massive casualty drill for five consecutive years because they experienced actual mass casualty events that covered all drill requirements. Cochise County is in a key strategic location where the potential for volatile events is great. The ability to use this Network for telehealth applications, such as linkages of EMS agencies with law enforcement and medical facilities, would greatly improve our response to security and safety issues.

ARCHIE can also provide expanded health education opportunities for both staff and health consumers. Currently, internet connections are not readily available for staff to use in exam rooms, emergency departments, or patient areas, as they are in higher care level institutions. Perhaps the most urgent need for internet use in clinical care is the ability to download pharmaceutical information to avoid medical errors involving prescribing, drug-drug interactions, and adverse drug reactions.

And finally, members of ARCHIE perceive tremendous advantages to our clients by facilitating data exchange among the network affiliates. A plethora of recent studies have cited medical errors, or iatrogenic causes, as a major reason for fatalities in US healthcare. One report (JAMA, October 2003) estimated there are nearly 200,000 deaths annually due to medical error. Many of these errors can be traced to a lack of proper documentation and communication. Providers in Cochise County constantly bemoan how many hours of their busy clinical practices are spent trying to locate patient information. Take the case of Edward W. He presented to a health clinic in Elfrida. He hurt his back while performing farming chores. He was sent to a facility in Tucson for imaging studies and a couple of weeks later returned for his follow-up appointment. His provider had not received any imaging reports for her patient. She called the hospital in Tucson and was told the films were sent to Sierra Vista for reading. She called the radiologist in Sierra Vista (70 miles from Elfrida) to find they did not have a report on her patient, nor the films. The patient left the clinic that day no further along in his diagnosis or treatment. The provider spent two hours of a busy clinic day on the phone trying to track down the images and reports. Patient data exchange will greatly facilitate improved patient safety, while saving providers hours of time in tracking down records. The utilization of healthcare providers' time is extremely important in a county classified as a Primary Care Health Professional Shortage Area [PC-HPSA] and a Medically Underserved Area [MUA]. Cochise County has only 165 physicians for the 132,000 people that reside in the county full-time (a rate of 125/100,000, as compared to the national average of 198/100,000), plus the estimated 100,000+ that reside in the county for part of the year (snow birds, migrant farm workers, immigrants). Predictably, the physician shortage has resulted in an out-migration of medical services from Cochise County communities.

Currently, patients like Edward W must travel around the county, even the state, to obtain needed medical services. Some health services are offered in just one location in the county. Dialysis, labor and delivery, and specialty consultations are just a few examples. But as they move around, their health information remains stationary, tied to the institution where the test, lab, image, or consult was performed. This does not provide a continuum of care for patients. Many services have to be repeated, resulting

in delayed care for clients and additional costs for already marginal rural health facilities. In some medical situations, time is of the essence. In diagnosing high risk pregnancies, cancers, cardiac or renal disease, a few weeks delay is life threatening.

Affiliate organizations of ARCHIE have noted that the ability to share health information will result in greater accuracy of records; fewer errors, redundancies, and time wasted by healthcare professionals; greater sharing of health resources and use of economies of scale; standardized billing procedures; better information security as we eliminate the faxes, papers, films, couriers; ability to create registries and aggregate data for the county; and improved patient transfers and referrals. This last issue is of great concern in our area, as already noted, healthcare consumers must move around the county to obtain needed services. An illustration of what can happen during patient transfers is Maria G. Maria is in her eighties, and has been diagnosed with diabetes, hypertension, and congestive heart failure [CHF]. She was hospitalized in Douglas due to exacerbations of her illnesses, and subsequently transferred by air to a facility in Tucson where she remained for a week. She was transferred back to Douglas where she was noted to have difficulty breathing. Her primary care physician diagnosed an asthma exacerbation, although asthma was not listed in her medical problems. Her breathing became more and more labored over the next three days, until she was taken to the emergency department and diagnosed as having pulmonary hypertension related to her CHF and had to be airlifted back to Tucson. In the ED it was noted that her diuretic medication had been inadvertently left off of her transfer instructions from Tucson back to Douglas and probably had been a significant factor in her declining medical status. Maria was put into jeopardy by a minor oversight, and the cost to both institutions was quite high considering the air travel and number of days spent in the hospital.

Lydia P also represents the kind of health care needs we see in southeastern Arizona, along the international border. Lydia was born in Mexico, married to a farm worker, and the mother of 14 children. She presented to a local clinic and was diagnosed with an enlarged and infected kidney requiring surgery. She did not qualify for any of the programs that could have funded her surgery. In part, she did not qualify because there was inadequate communication between the safety net providers and systems designed to help her. Lydia died while awaiting surgery.

We need to do better for our patients.

**TOTAL ANNUAL COSTS**

The costs to support the goals and objectives described above are segmented into three functional categories: Fiber, Infrastructure Hub and Telehealth Tools. These functional categories are planned to overlap in time and effort but can be phased and managed separately to optimize success. The overall technical model is based on industry, state and federal roadmaps of medical grade networks and will utilize purchased off the shelf hardware and software to improve supportability.

The primary goal for the network is to provide consistent, redundant, bi-directional connectivity between the health care entities in Cochise County, then to extend that connectivity to Tucson or any other healthcare delivery site in our geographic region. This linkage will directly facilitate the telemedicine program, and will also be a building block to assist in the realization of the other telehealth goals. The current connectivity infrastructure has problems regarding speed of transmissions, security and reliability of connections between healthcare entities. Installation times and costs have been prohibitive in the past for high speed connections. Technical staff is minimal at each entity and telecom network provider contract negotiations have been difficult.

Solutions presented to alleviate these connectivity problems can range from T-1 connections to Fiber Optic connections. By collaborating on our requirements and on administration of the contract with the infrastructure vendor we have received a much reduced estimated rate of implementations and on-going management. These rates are used as cost estimates and will be evaluated through a competitive bidding process when funding is awarded.

The bidding process, contracting, purchasing of routing hardware and implementation of the phase one sites will be managed collaboratively through Cochise Network Association [CNA] for efficiency and compliance to the grant goals. Post implementation of phase one entities, the costs of on-going maintenance, and implementations of other entities will be managed through a shared utility model for technical services operated by CNA.

The infrastructure proposed will be robust enough to manage the current telemedicine and telehealth needs, plus accommodate more advanced sharing of information whether that is text based, radiology images, or video images. The Fiber connections can run at OC-3 speed. The costs include a shared network management service that will be purchased annually from a chosen network provider that will augment the region's technical abilities in security, routing and rerouting of transmissions, and separating private and public access. This service will be competitively purchased through the bidding process and service level agreements will be negotiated for network availability, delivery, and reporting of services.

The costs of implementing Fiber connections to each of the listed phase one and phase two entities are below. These costs include one-time costs for Cisco routing/security hardware, installation of the Fiber, and maintenance of the fiber connections, routing hardware, and multi-protocol layer switching services (MPLS). Installation timeframes

are estimated at 120 days simultaneous for all phase one sites starting at contract signing and are outlined in the project plan and timeline question later on. Operational usage of the new connectivity will be based on each facilities technical readiness and healthcare needs. A diagram of proposed connectivity is in Appendix 1 and is based on both Cisco and Qwest best practice models. At the end of year one, nine entities will be installed. At the end of year two, six additional entities will be installed. Year three is operating fifteen entities.

| **Network Fiber** | Install | Ongoing | Total |
|---|---|---|---|
| Costs Year 1 | 1,152,477 | 503,496 | **$1,655,973** |
| Costs Year 2 | 768,318 | 839,160 | **$1,607,478** |
| Costs Year 3 | | 839,160 | **$839,160** |
| **Total** | **$1,920,795** | **$2,181,816** | **$4,102,611** |

The second functional area of costs are associated with the goal of providing telehealth data exchange between the healthcare providers in Cochise county; we call this category Infrastructure Hub. This goal is dependent on a robust reliable network infrastructure in which to exchange data. The electronic transfer of basic information is the focus of this section. These costs will automate and improve many of the current exchanges of healthcare information between entities to facilitate care delivery and care coordination. This is an innovative method of using a more advanced telecommunications network to affect the healthcare delivery in a geographically large county.

We have focused our costs on providing hub technology to minimize maintenance to exchanges, to capitalize on similar exchange formats, and to standardize presentation and eventually integration of these exchange packets. The implementation and maintenance of these exchanges are better served in a co-op technical services model, but could be the responsibility of each entity themselves. Currently there are multiple examples of telehealth in Cochise County that can be improved by a facilitative hub technology that can standardize and share the appropriate information across the county.

There is a multi-faceted teleradiology program linking many of the rural entities with facilities of research and consultation in Tucson, this exchange of critical health information can be shared to less technology advanced organizations utilizing the hub. We could also share radiological information across entities in Cochise County allowing for better coordination of care closer to the patient's home. There is emergency transport information that is shared through faxes, and phone/radio. This information can be linked into the EMS system that is currently installed in many of the fire and ambulance services to facilitate accurate transfer of patient medical conditions and vital information. There is emergency room transfer information that is shared to many entities by fax, mail, or simple file transfers. This could be facilitated with a standardized Coordination of Care Record [CCR] transfer. This standard has been recommended by federal and state agencies as the appropriate data packet between healthcare

providers. Standardizing these paper and simple electronic transfers to a common hub exchange would facilitate more efficient care and leverage the exchanges for other entities.

The third stage of the telehealth applications would be to build upon the basic one-way data exchanges listed above to a more complete bi-directional exchange of healthcare data that can be integrated into the more advanced entities' health information systems. This stage would need a more functional software toolset that is web-based and service oriented architecture to allow for industry standard data sharing without requiring a huge overhead of services. The software and architecture that we are proposing is currently operational at other healthcare provider data exchanges. Pricing is based on a centralized hub technology with centralized technical services. This will minimize contracting, implementation, prioritizing of projects and maintenance of exchanges.

| | Install/one-time | Ongoing | Total |
|---|---|---|---|
| **Year 1** | | | |
| Network Fiber | 1,152,477 | 503,496 | $1,655,973 |
| Administrative Agency | | 80,000 | $80,000 |
| Infrastructure Hub | 50,000 | 305,900 | $355,900 |
| Telehealth Tools | 169,000 | 301,400 | $470,400 |
| Total | $1,371,477 | $1,190,796 | **$2,562,273** |
| **Year 2** | | | |
| Network Fiber | 768,318 | 839,160 | $1,607,478 |
| Administrative Agency | | 80,000 | $80,000 |
| Infrastructure Hub | | 331,400 | $331,400 |
| Telehealth Tools | 108,400 | 296,000 | $404,400 |
| Total | $876,718 | $1,546,560 | **$2,423,278** |
| **Year 3** | | | |
| Network Fiber | | 839,160 | 839,160 |
| Administrative Agency | | 80,000 | 80,000 |
| Infrastructure Hub | | 331,400 | 331,400 |
| Telehealth Tools | | 404,400 | 404,400 |
| Total | | $1,654,960 | **$1,654,960** |
| **TOTAL COSTS** | **$2,248,195** | **$4,392,316** | **$6,640,511** |

## FINANCIAL VIABILITY

The financial principles guiding the business plan for ARCHIE are:

- Incrementally phase network infrastructure build out to best manage project costs
- Organizations working together decreases costs by facilitating better purchasing power and improving efficiencies with scarce resources
- There is value to data sharing – patient safety and lower healthcare costs
- The federal and state healthcare payers are initiating requirements for aggregated health data in order to receive government healthcare payments - this applies to approximately 43% of Cochise County residents
- Allocate costs utilizing a model based on the operating budget of each member organization (model agreed upon by group consensus)

The project infrastructure costs will be paid for in two approaches corresponding to the initial start up and on-going sustainability. The coalition will seek any grant funding programs focusing on: improving healthcare network infrastructure, improving healthcare communications pertaining to bio-surveillance and possible national security threats, and programs targeting improved patient safety. With the current national and state push to implement Health-e systems, there are funding opportunities at both levels of government in the areas of competitive grant funding, research, Medicare and Medicaid agencies, and direct appropriations. ARCHIE plans to solicit such opportunities where applicable.

Start up costs not covered by grant funding will be shared amongst ARCHIE members via an allocated cost model based on each organization's operating expense. Therefore, each organization joining the project will provide an annual report showing their annual operating expenses via their audited financial statements and publicly available IRS 990 filings. By using this allocation metric, the infrastructure costs will be equitably allocated across the members based on their financial size.

We will also approach stakeholders in our communities, demonstrating how ARCHIE can improve access to and quality of healthcare services. We anticipate investment from stakeholders based on the improvements we can offer for the Cochise County health delivery system. Several local stakeholders have been identified in the Public Safety sector, including Border Patrol (approximately 600 agents are deployed in Douglas and Naco, along the border), the county jail (Bisbee), and the state prison (Douglas).

Employer groups in the county are another source of potential investment. Poor health and education infrastructure in the county are often cited as causes of low recruitment to and retention in our area. Health facilities, providers, consumers, and payers are additional local stakeholders. The health organizations that comprise ARCHIE each have internal IT budgets. Some of those dollars will shift to the Network as other costs (fax communication, imaging film and storage, couriers, adverse patient reactions, medical liability, unnecessary repeated tests and procedures) diminish through the implementation of ARCHIE. Billing and collections should also improve with standardization and computerization of these functions.

Community fundraising can be used to augment infrastructure costs. Southeastern Arizona Medical Center mounted a fundraising campaign to assist with a new dialysis center in Douglas during 2005-06 and was very successful in their attempt. The groundbreaking ceremony was held in October 2006, with the center scheduled to open in summer 2007.

The northern area of the county has a health tax district based on property taxes. Towns in the southern county region are currently developing a plan to initiate a 0.5% sales tax for healthcare resources. This may prove to be a funding source for both capital and operating expense associated with this project.

Healthcare payers will benefit greatly from the increased availability of data generated through our Network. They will be approached to cost share in our telecommunication model. Pharmaceutical companies are in a similar position as payers, and will be asked to share some costs of utilizing our Network.

| **Full Cost** | Year 1 | Year 2 |
|---|---|---|
| **FIBER**/HUB | 2,091,873 | 2,018,878 |
| Telerad/ Tele-health | 470,400 | 404,400 |
| Total | $2,562,273 | $2,423,278 |

| **15% Match** | Year 1 | Year 2 |
|---|---|---|
| **FIBER**/HUB | 292,862 | 302,832 |
| Telerad/ Tele-health | 70,560 | 60,660 |
| Total | $ 363,422 | $ 363,492 |

| | CCHC | RBHC | SVRHC | SEABHS | SAMC | CQCH | EMS | NCMC |
|---|---|---|---|---|---|---|---|---|
| Fiber **Full** Costs yrs 1,2 | 140,155<br>135,265<br>31,517<br>27,095<br>$334,034 | 140,155<br>135,265<br>31,517<br>27,095<br>$334,034 | 556,438<br>537,022<br>125,126<br>107,570<br>$1,326,157 | 278,219<br>268,511<br>62,563<br>53,785<br>$663,078 | 278,219<br>268,511<br>62,563<br>53,785<br>$663,078 | 278,219<br>68,511<br>62,563<br>53,785<br>$663,078 | 140,155<br>135,265<br>31,517<br>27,095<br>$334,034 | 278,219<br>268,511<br>62,563<br>53,785<br>$663,078 |
| Fiber **Grant** Allocation Costs yrs 1,2 | 19,622<br>20,290<br>4,728<br>4,064<br>$48,703 | 19,622<br>20,290<br>4,728<br>4,064<br>$ 48,703 | 77,901<br>80,553<br>18,769<br>16,136<br>$193,359 | 38,951<br>40,227<br>9,384<br>8,068<br>$96,680 | 38,951<br>40,227<br>9,384<br>8,068<br>$ 96,680 | 38,951<br>40,227<br>9,384<br>8,068<br>$ 96,680 | 19,622<br>20,290<br>4,728<br>4,064<br>$ 48,703 | 38,951<br>40,227<br>9,384<br>8,068<br>$ 96,680 |

**NETWORK MEMBERS**

| Health Care Facility | Address | Zip Code | RUCA Code* | Phone Number |
|---|---|---|---|---|
| **Phase 1 - Pilot** | | | | |
| Sierra Vista Regional Health Center [SVRHC] | 300 El Camino Real Sierra Vista, AZ | 85635 | 4 | 520-417-3003 |
| Chiricahua Community Health Centers, Inc [CCHCI] | P O Box 263 Elfrida, AZ | 85610 | 10.5 | 520-642-2222 |
| R W Bliss Army Health Center [RWBAHC] | 45001 Winrow Ave Ft Huachuca, AZ | 85613 | 4 | 520-533-9313 |
| **Phase 1 - Expansion** | | | | |
| SouthEastern Arizona Behavioral Health Services [SEABHS] | 611 W Union Street Benson, AZ | 85602 | 7.3 | 520-586-0800 |
| Southeast Arizona Medical Center [SAMC] | 2174 W Oak Ave Douglas, AZ | 85607 | 4 | 520-364-7931 |
| Northern Cochise Community Hospital [NCCH] | 901 W Rex Allen Dr Willcox, AZ | 85643 | 7 | 520-384-3541 |
| Copper Queen Community Hospital [CQCH] | 101 Cole Avenue Bisbee, AZ | 85603 | 7.4 | 520-432-5383 |
| Cochise County Sub-Regional EMS Council [CCEMSC] | 4817 Apache Street Sierra Vista, AZ | 85650 | 4 | 520-378-3276 x13 |
| Southern Arizona Health Information Exchange [SAHIE] &/or University of Arizona [UoA] & I2 | Governmental, Academic, and Healthcare Hubs | | | |
| Arizona Health Care Cost containment System [AHCCCS] | | | | |
| **Identified Phase II Participants** | | | | |
| Cochise College [CC] | 4190 West St Hwy 80 Douglas, AZ | 85607 | 4 | 520-515-8750 |
| Arizona Family Care Associates [AFCA] | 6 S Second Street Sierra Vista, AZ | 85635 | 4 | 520-458-4335 |
| Copper Queen Medical Associates, Rural Health Clinics | 101 Cole Avenue Bisbee, AZ | 85603 | 7.4 | 520-432-5383 |
| Catholic Community Services in Southeastern Arizona [CCS] | P O Box 1777 Bisbee, AZ | 85603 | 7.4 | 520-432-2285 |
| Cochise County Workforce Development [CCWD] | 1843 Paseo San Luis Sierra Vista, AZ | 85635 | 4 | 520-458-9309 |

*2004 ZIP RUCA Code Files

Member Organizations

Sierra Vista Regional Health Center is the applicant and lead organization of ARCHIE. SVRHC is a Level 2 inpatient facility with an emergency department and an urgent care center. Many of the county's referred patients end up at SVRHC temporarily, but they will return to their communities and Primary Care Providers [PCP]. It would greatly improve patient safety if their medical information also returned to their communities with them, and to their PCPs.

Chiricahua Community Health Centers, Inc is a federally qualified community health center with 3 outpatient clinics, a mobile unit, and a dental unit. They provide sliding fees based on income to their healthcare clients. With no inpatient capability, their clients must utilize lab, imaging, emergency, and inpatient services at other locations, preferably within Cochise County.

RW Bliss Army Health Center is located at Ft Huachuca, an Army intelligence base located near Sierra Vista. They have no inpatient, emergency or urgent care services at the center. Therefore, they must send their active duty and retired military patients to other facilities in their area to receive those services. There are more than 27,000 shared beneficiaries between RWBAHC and Sierra Vista healthcare organizations. Currently there is no flow of information between the base health clinic and the outside services offered by other providers. This site is also extremely important in national security, emergency, and surveillance activities to be implemented with the deployment of this regional broadband network.

SouthEastern Arizona Behavioral Health Services provides the only publicly funded behavioral health services in 4 extremely rural counties in Arizona. In Cochise County, SEABHS has an inpatient psychiatric facility and 5 outpatient clinics, as well as a crisis intervention team, housing facilities for SMI clients [seriously mentally ill], and a prevention & community development division. Health organizations in the county have been attempting to better integrate clinical medicine and behavioral health. We see ARCHIE as fundamental in this process. Particularly as the Arizona Medicaid program recently ruled that only behavioral health specialists [Psychiatrists and Psychiatric Nurse Practitioners] may prescribe pyschotropic medications to be covered by AHCCCS payers. PCP's are no longer able to provide this service to their AHCCCS patients.

Southeast Arizona Medical Center is the inpatient and emergency health facility in Douglas. They also have an outpatient clinic, and are constructing a dialysis center, which will be only the second in the entire county. Douglas is directly on the international border with Mexico. Agua Prieta is their sister town which begins on the other side of the border and is a major crossing point for illegal entry into the US.

Northern Cochise Community Hospital is an inpatient, outpatient, and emergency facility in Willcox. They have recently begun offering Online Healthcare, interactive healthcare services for their community. NCCH operates in an extremely rural area of the county, which has significant proportion of the population working in agriculture.

Copper Queen Community Hospital offers inpatient, outpatient, and emergency services in historic Bisbee. They are affiliated with Copper Queen Medical Associates, a federally designated Rural Health Clinic. Bisbee is only 5 miles from the port of entry at Naco, Arizona and Naco, Sonora; hence CQCH also deals with a large number of border crossers.

The Cochise County Sub-Regional Emergency Medical Services Council is a network made up of the 25 fire and EMT agencies in the county (many are small volunteer forces). Approximately 90% of their calls are regarding emergency services, fighting fires are no longer their main activity. They work closely with Ft Huachuca, air ambulance services, and all of the hospitals in our county. They are involved with many search and rescue operations related to illegal border crossings.

Cochise College is the only community college in our county. The college offers large programs in nursing and allied health professions. They also have renowned programs in aviation and military intelligence training, strongly related to the national security issues presented by our border location.

Catholic Community Services in Southeastern Arizona is the major social services agency in our area. They also operate in the same 4 county region as SEABHS. CCS provides services for seniors, handles all adoption and foster child programs, offers the majority of home health services, and operates the only public low cost transportation across the county.

Cochise County Workforce Development is a governmental agency and works closely with the Cochise Network Association in providing healthcare recruitment and training.

Each member organization is a non-profit entity, except Cochise College, RWBAHC and CCWD, which are governmental agencies, and AFCA which is a for-profit health provider group with 2 outpatient clinics in Douglas and Sierra Vista.

Please find Memoranda of Agreement from ARCHIE members in Appendix 4, and Letters of Support from ARCHIE partners in Appendix 5. References to financial contributions already made are costs associated with project development and technical assistance, not matching funding requirements.

<u>For-Profit Network Members</u>
Arizona Family Care Associates [AFCA] is the only for-profit healthcare business among ARCHIE members, thus far. The member consensus is that for-profits must pay all costs associated with required infrastructure, equipment, and tools necessary for their connection to our hub system. However, they will still benefit from the group purchasing prices to be negotiated; accordingly membership in our broadband network is of great benefit for these businesses.

## PREVIOUS TELEMEDICINE & TELEHEALTH EXPERIENCE

Cochise Network Association initially identified 4 key areas of focus in order to leverage personnel and expertise to address infrastructure inadequacies facing the Cochise County healthcare system. Information Technology [IT] was one of the four areas. CNA held its first IT Workshop in September 2002. The Information Technology Action Group [ITAG] was initiated in early 2004, and the ITAG has met every other month since. The ITAG has been preparing for an IT Project that could enhance our rural health environment for the past two years. One of the primary goals has been to identify a technical team to assist in the formation of telecommunications infrastructure and tools. CNA has located a technical services group that fits our goals, needs, and situation, InTech Health Ventures, and are ready to implement ARCHIE.

InTech Health Ventures is the technical team CNA, ITAG, and ARCHIE have been collaborating with over the past year. InTech has been working in health e-technology and e-systems for fifteen years. Their experiences include:

- Responsible for reengineering entire network infrastructure to a distributed multi-tiered model in 550 bed hospital to facilitate clinical data exchange
- Led development of a strategic plan and tactical implementations in an integrated healthcare delivery model, including a health plan, hospitals, physician clinics and reference lab.
- Implemented a federated pharmacy prescription processing technology model with national coverage including pharmacies, pharmaceutical companies, claims adjudications and customer call center. This model was compliant with CMS regulatory requirements.
- Implementation and adoption of ambulatory electronic medical record systems in integrated delivery systems and large physician practices located nationally.
- Developed consulting organization to help healthcare companies optimize clinic systems in regional care delivery.

Southeast Arizona Medical Center [SAMC] has been a member of the Arizona Telemedicine Program for 6 years, utilizing ATP for specialty consults, Continuing Medical Education, and training workshops. Additionally, SAMC has been a pilot site for the University Medical Center of Tucson teletrauma program over the last 4 years. This program has saved lives by directing surgeries and procedures from a Level 1 Trauma Center to a community hospital utilizing video feed transmitted via broadband connections. SAMC has also utilized teleradiology services since 2004, enabling this facility to offer radiological services where there is little hope of recruiting and retaining radiologists.

SouthEastern Arizona Behavioral Health Services [SEABHS] has eight years of telemedicine experience operating in four Arizona counties, and major centers within the state. Their usage has been chiefly related to educational and training purposes, and SEABHS is seeking to expand their capability to integrate more fully with clinical medical providers, and emergency services through their crisis intervention program.

Chiricahua Community Health Centers, Inc [CCHCI] is the only health provider in the county currently employing the Arizona Health Care Cost Containment System [AHCCCS, the state Medicaid program] e-application. CCHCI also utilizes health e-systems to monitor immunization and disease patterns in conjunction with the Arizona State Immunization Information System [ASIIS].

Raymond W Bliss Army Health Center [RWBAHC] has the only fully operational EHR and PACS systems in Cochise County. They are technology leaders in our rural area and have been good models, as well as partners, for how to successfully launch and implement telemedicine and telehealth applications over broadband networks. Their health center is connected to many major military health installations, greatly enhancing their capacity to serve the 27,000+ Cochise County residents eligible for care at their facility.

Northern Cochise Community Hospital implemented teleradiology in 2004. Again, a small rural community hospital has been able to offer imaging services via a telecommunications application, which it previously had no means of providing. The benefits of telemedicine applications that ride over broadband facilities are tremendous for rural health providers.

ARCHIE members have a strong relationship with the Arizona Office of Rural Health, a key constituent of the Arizona Telemedicine Program. Their office was readily available for consultation on this project and has advised us they are eager to provide continued guidance to our project for coordination with ATP so that the ATP resources can be fully utilized by Cochise County health professionals.

## PROJECT MANAGEMENT PLAN

Network Administration

The infrastructure network technical operations and telemedicine/telehealth applications will be administered and managed by Cochise Network Association. CNA's non-profit status and board representation of executives from member entities insures the appropriateness of membership fees and operational costs. This "management neutral" entity will provide administrative services to ARCHIE members such as:

- Contracting
- Project management and implementation services
- Security and privacy requirements
- Data integration and management
- Patient data access and consent
- Coordination and liaison among ARCHIE member organizations

Implementation approach

As the leader of the regional healthcare model, SVRHC's goal is to have all organizations seeking improved patient care and lower healthcare costs join this telecommunications coalition. To better insure overall project success, the start up implementation phase is focused on the region's providers in conjunction to teleradiology and telehealth electronic processes. As the network is utilized, additional members with additional needs around patient care/information can be implemented.

The phased in approach to implementing this project is centered on our co-operative management structure to insure timeliness, effectiveness of the implemented solutions, and measurable deliverables. The implementation steps are phased over three years with the majority of implementations taking place in years one and two. Cochise Network Association [CNA] will be the administrative and implementation body with technical services augmented by additional service providers. CNA will work closely with SVRHC (applicant organization) to ensure all legal and fiscal requirements and reporting are achieved.

ARCHIE's implementation will be broken into three phases to monitor progress, the phases are:

1. Fiber infrastructure – measures for completion are:
    i. Competitive bid process and contract negotiated to signature
    ii. Seven – nine organizations connected via Fiber and MPLS services by end of first year
    iii. Service level agreements with technology provider established and monitored to 95% compliance
    iv. Six – eight organizations connected by end of second year
    v. Six – eight organizations connected by end of third year
2. Infrastructure / Hub Services
    i. Implementation of the hub technology

ii. Automation of four simple data exchange packets– increasing patient quality and provider efficacy
iii. Standardized interfaces or exchange protocols to minimize rework at each facility and improve future data exchanges

3. Telehealth Services
    i. Implementation of Exchange technologies
    ii. Two pilot exchange integrations completed
    iii. Four exchange integrations completed

| Schedule | June – August 2007<br>3 months | Sept 07 – February 08<br>6 months | March – May 08<br>3 months | June – Nov 08<br>6 months | Dec 08 – May 09<br>6 months |
|---|---|---|---|---|---|
| **Fiber Infrastructure** | Create competitive bid RFP for network services | | | | |
| | Define Co-op Organization | | | | |
| | Negotiate Network Contract including SLAs | | | | |
| | | Install Fiber Phase 1 sites | | | |
| | | | Service Level Agreements monitored | | |
| | | | | Install Fiber Phase 2 sites | |
| **Infrastructure / Hub Services** | Negotiate Technology Services Contract | | | | |
| | | Hub Technology Installed | | | |
| | | 4 pilots exchanges | | | |
| | | | Standardize Protocols | | |
| **Telehealth Services** | | Create competitive bid RFP for exchange software | | | |
| | | Negotiate Exchange Contract | | | |
| | | Negotiate Technology Services contract | | | |
| | | | Exchange technology installed | | |
| | | | | 2 integration projects completed | |
| | | | | | 4 integration projects completed |

The facilities will be implemented on the following phased approach.

| Pilot Facilities | Phase 2 Facilities | Phase 3 Facilities |
|---|---|---|
| • Sierra Vista Regional Health Center | • Provider groups | • Prisons, jails |
| • Chiricahua Community Health Centers Inc | • Independent providers | • Border patrol |
| • RW Bliss Army Health Center | • Outpatient clinics | • Third party payers |
| **Phase 1 Expansion** | • Urgent care | • Allied health services |
| • SouthEastern Arizona Behavioral Health Services | • Pharmacies | • Social services |
| • Southeast Arizona Medical Center | • Oncology centers | • Dialysis centers |
| • Northern Cochise Community Hospital | • Cochise College | • Alternative care providers |
| • Copper Queen Community Hospital | • Arizona Department of Health Services & Cochise County Health Department | • Assisted Living Facilities |
| • Cochise County Sub-Regional EMS Council | • SonoraLab &/or LabCorp | • Long term care centers |
| • SAHIE or UMC &/or UoA Rural Health Office with a connection to Internet2 | • Additional EMS providers | • Other colleges & schools |
| • Arizona Health Care Cost Containment System | • Arizona State Immunization Information System [ASIIS] | • Centers for Disease Control & Prevention |

The telehealth services implementation is critical to the on going use and effectiveness of the network infrastructure. The work plan for this functional area is to work to automate and/or improve current data exchange projects. The focus will be to make this project more available to the entire county and create more reliable data transfers. The telehealth functionality in this step will be reengineered using a hub technology, one database and server that are used as the standardizing and dispatching services for these simple data exchanges. This server will be a federated, three tier architecture that will have logging and audit abilities but not a clinical repository for the region. The types of data exchanged will be:

**Pilot data sets**

- Patient Demographics
- Chief Complaints / Problems
- Medications
- Lab Reports
- Eligibility

**Expansion data sets**

- Allergies
- Radiology Images
- Outpatient Medications
- Advance Directives
- Video Imaging in Emergency situations

Prioritization of the data exchange projects will be the responsibility of the Network but the initial 4 pilot projects chosen to date are:

1. Patient referrals and transfers between Chiricahua Clinics and Sierra Vista Regional Health Center
2. Emergency Department and Urgent Care transfers between Sierra Vista Regional Health Center and RW Bliss Army Health Center
3. Emergency Department and provider availability in Tucson for medical transfers
4. Ambulance transfers in transit to Sierra Vista Regional Health Center and Copper Queen Community Hospital

## TELEMEDICINE COORDINATION

ARCHIE plans to join to the Arizona Telemedicine Program, based at the University of Arizona in Tucson, which offers telemedicine services, distance learning, and telemedicine technology assessment to communities throughout the state. Currently only three health organizations in Cochise County are employing this technology. The remaining organizations have previously found the program cost prohibitive after estimating the costs for developing the necessary infrastructure and joining the AT Program. Cochise County healthcare organizations have identified a need for telemedicine connections with each other, rather than each entity connecting to the nearest Telemedicine hub in Tucson. Our proposal seeks to minimize these obstacles and enhance telemed capabilities by leveraging resources and developing a local telemedicine hub in our county.

Through the use of telemedicine services, the county's health organizations can gain increased access to continuing education and research at the University of Arizona (home to the Arizona's only College of Medicine) and other academic institutions. In Cochise County there is a particular need for telemedicine applications such as teletrauma and telestroke, providing specialty and sub-specialty consults to patients in areas where these services are currently unavailable, and the ability to coordinate a rapid response with our nearest metropolitan center (Tucson) in the event of a state or national crisis. The University of Arizona is linked to Internet2 via Arizona State University (currently the UoA is applying for a direct connection). By linking our network with UoA Telemedicine, we can also be connected with Internet2.

Our goals include greater communication and coordination with agencies such as Arizona Health Care Cost Containment System [AHCCCS – the Arizona Medicaid plan], Arizona Department of Health Services [ADHS], Arizona State Immunization Information System [ASIIS], VA Hospitals, and the Centers for Disease Control and Prevention. As well as connecting 'up' the pipe to state and federal health resources, ARCHIE plans to connect 'down' the pipe to bring in neighbors that can benefit from our hub structure. Cochise County borders New Mexico and Mexico; consequently we have common clients and health concerns. Improving communications in the greater regional and international arena is part of our long-term goals. RW Bliss Army Health Center is one of our key members that have elucidated the benefits of being 'connected' all over the world.

Cochise County health facilities and providers have long-standing ties to the Tucson medical community. A Network for the Tucson metropolitan area is in the planning phase. Southern Arizona Health Information Exchange [SAHIE] is in close contact with our telecom network group, and many Cochise County health organizations are participating in SAHIE's governance structure. At a recent meeting of the 2 Networks, SAHIE representatives advocated that ARCHIE's development would advance the SAHIE model when the 2 Networks are ready to link. Our project has followed their lead in utilizing a neutral non-profit entity as our governance model. They have also offered to share some of the business and legal documents they have generated in collaboration with state entities.

## NETWORK SUSTAINABILITY

Once the network infrastructure capabilities are deployed, telemedicine and telehealth applications can be further expanded, deployed, and utilized. At this time, ARCHIE will institute a sustainable hybrid cost model consisting of annual member subscription fees and per transaction costs. Annual member subscription fees will be based on the on-going costs associated to supporting and operating the network infrastructure and information management.

Members will be responsible for an annual membership fee based on their original commitment to the network project, and an allocation of the expected network costs for the subsequent year. In addition, members will pay a transaction fee based on utilizing the telemedicine and telehealth capabilities on a per transaction data inquiry basis. This supports the group's vision of fairly distributing costs to the entities that utilize the network and applications the most frequently, and gain the most benefit from usage of telecommunications.

Another component of sustainability will be adding new entities to the regional network and data applications. The new members will also pay member subscription and transaction fees. Cochise Network Association and ARCHIE members will collaborate to determine the appropriate membership fee for new members. It is expected that new member subscription and transaction fees will be higher than initial members because they are not contributing to initial planning, start up, and troubleshooting phases and costs. The additional revenues generated by new members participating in ARCHIE will help lower total costs for all members overall.

All healthcare stakeholders in the region can benefit from the patient information and operational efficiencies generated from the high capacity network and information exchange applications. We anticipate operational, financial, and patient care improvements to the following:

- Employer groups in the county such as the Border Patrol (approximately 600 agents are deployed in Douglas and Naco, along the border), the county jail (Bisbee), and the state prison (Douglas) would all benefit from participating in the regional healthcare network. All healthcare facilities, providers, consumers, and payers are additional local stakeholders.

- Member organizations can allocate planned information technology funds to ARCHIE as current manual and paper process are automated. Electronic workflow and data will decrease fax communications, redundant film copies and storage, courier service costs, adverse patient reactions resulting in lower medical liability exposure and costs, and unnecessary repeated tests and procedures due to paper patient chart information not being available. In addition, with the availability of improved patient information there will be a direct impact on billing and collections for the providers.

- Community fundraising can be used to augment infrastructure costs. Southeastern Arizona Medical Center mounted a fundraising campaign to assist with a new dialysis center in Douglas during 2005-06 and was very successful in their attempt. The dialysis center, only the second in Cochise County, is scheduled to open in summer 2007.

- Northern Cochise County has implemented a health tax district based on property taxes. Towns in the southern county region are currently developing a plan to initiate a 0.5% sales tax for healthcare resources. This may prove to be a funding source for both capital and operating expense associated with this project.

- Healthcare payers will benefit greatly from the increased availability of data generated through the electronic data process as well as improved patient care outcomes.

- Pharmaceutical companies can also benefit as more patient medication results and outcomes are better measured and managed. They are very interested to identify patients with specific medical conditions that may be used in clinical trials. Decreasing the drug testing time is significant return to pharmaceutical companies as they try to move their products through clinical trials and approval.

The viability of ARCHIE depends on the members' ability to maintain trust and a cooperative spirit to work together for the good of each other and the area's patients. ARCHIE will have regional member representation insuring productive and trusted working relationships. There will be organizational and relational challenges as the network implements systems and grows; however, the most important aspect of continued support and success revolves around how challenges and possible conflicts are managed. Cochise Network Association has been working in the region since 2001 and has developed an important foundation to work from in helping regional and community organizations.

Our longer range goal is to also participate with our neighboring healthcare areas. Whether nearby entities want to connect hub-to-hub (Tucson metropolitan area) or join ARCHIE (potentially New Mexico, Mexico), we hope to continue to grow the scale of the technology that can help other area patient care and financial efficiency needs. For example, the international environment has several agencies which may support a venture among bi-national border health facilities including the NadBank, border health NGO's, AID, and the AZ-Mexico Commission.

<u>Return on investment.</u>
A high capacity data network including teleradiology and telehealth information exchange will have a significant return on investment to its members. ARCHIE has identified many important metrics that will be set up and monitored to insure financial and patient quality/experiences improvement. Metrics such as:

- Decreased adverse drug events throughout the region
- Decreased number of lab and radiology tests
- Decreased administrative costs for faxes, copies, and mailed correspondence
- Decreased clinician time calling other facilities and providers
- Reduced patient waiting time in all patient care settings
- Increased physician adoption of electronic applications

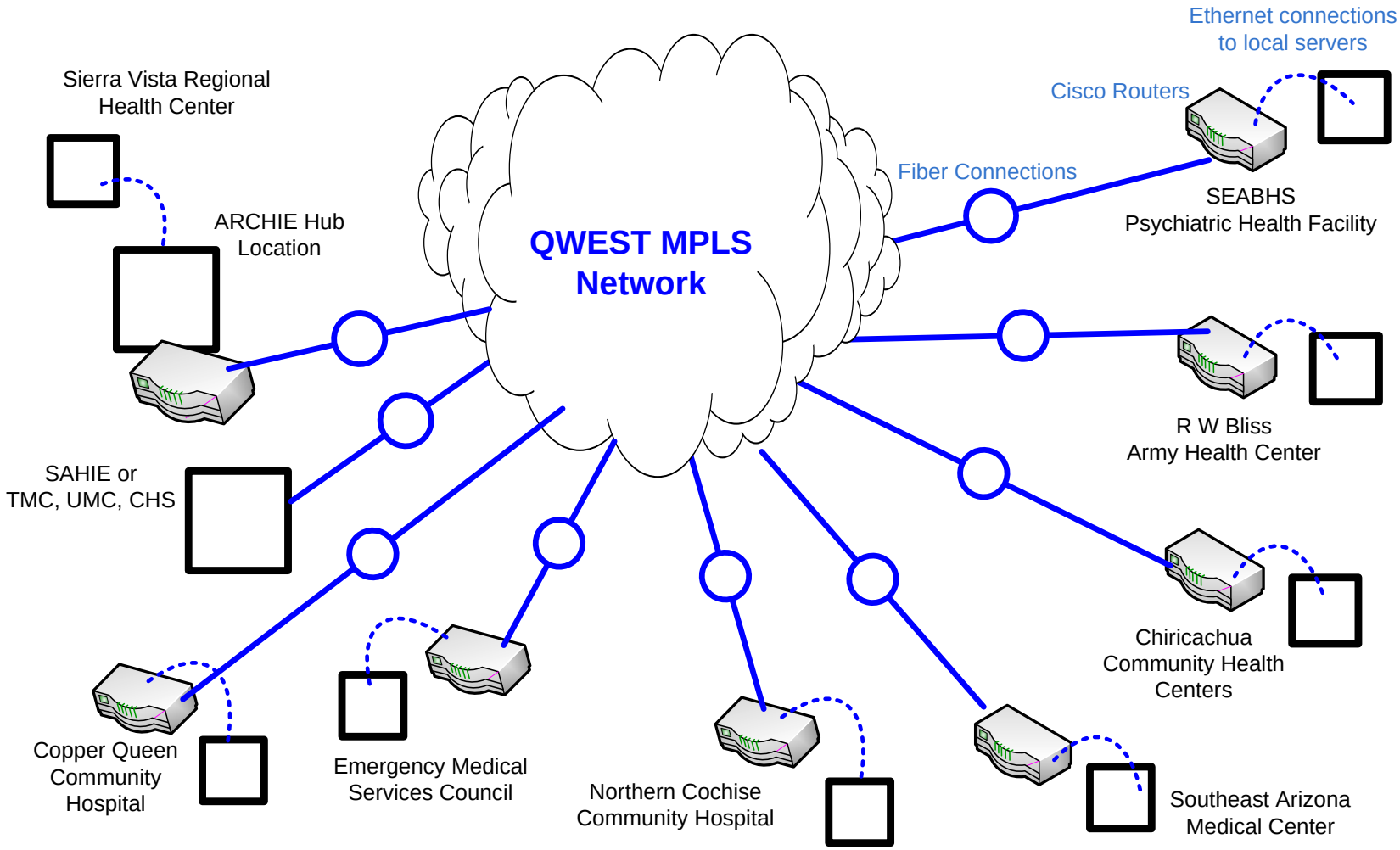
The members will work together and guide management staff to institute measure metrics in the current operating environments. Therefore, a baseline of current operational, clinical, and financial statistics can be accumulated. After implementing the electronic processes, organizations utilizing the new network infrastructure and data applications can do another work flow and data collection assessment and identify improvements and outcomes. This information can be compared to industry standards and best practices so process changes can be implemented to continue to improve patient outcomes and financial performance.

ARCHIE members, technical team, and administrative personnel have collaborated to produce a robust and reliable healthcare telecommunications infrastructure that will benefit stakeholders and health consumers, as well as significantly enhance educational and research information flow, and emergency and national security responses in our rural border area.

Appendix 1

# Arizona Rural Community Health Information Exchange

## Fiber Backbone Network



Appendix 2

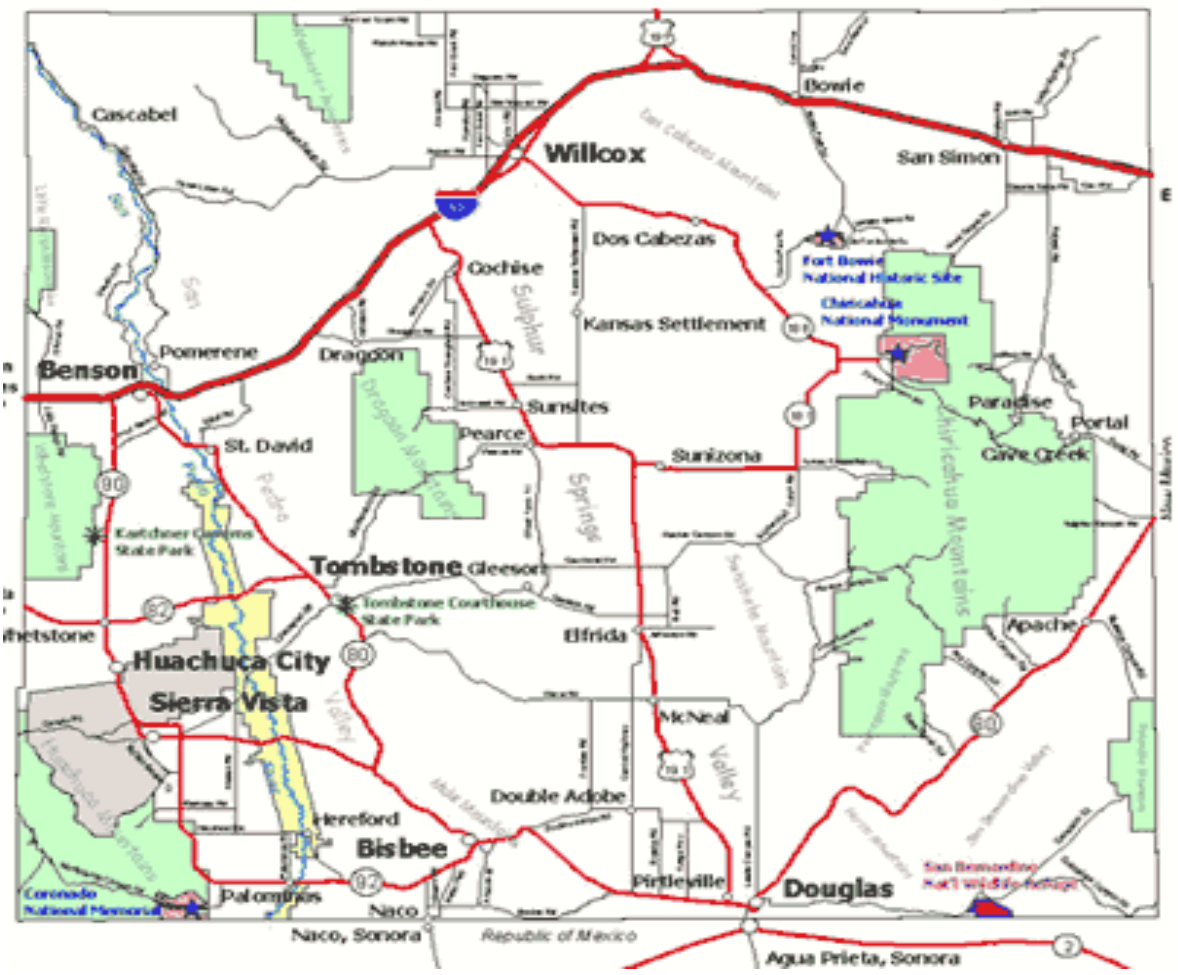
# Lessons Learned

As ITAG and technical staff traveled around the country to understand what state and regional telecommunications models are doing, and attending national conferences such as HIMSS, we saw that other attempts at collaboration had begun to produce significant messages. We call them Lessons Learned.

- Local versus statewide
- Incremental budget versus entire funding ($2-6M vs. $15M)
- Clear delineation between pilot projects versus regional delivery
- Use existing contracts where you can and depend on trusted individuals
- Board of Directors should be based on organizational involvement – individuals come/go - should be role based
- Governance should reflect customer and other stakeholders, not just payers and providers
- Selective inclusion and exclusion process, be able to defend and align with state appropriations process

# Appendix 3

## Map of Cochise County



# Chiricahua Community Health Centers, Inc.

*"The Clinic with a Heart"*

April 29, 2007

Margaret Hepburn, RN, MS
Chief Executive Officer
Sierra Vista Regional Health Center
300 El Camino Real
Sierra Vista, AZ 85635

RE: ARCHIE Project

Dear Ms. Hepburn:

Chiricahua Community Health Centers, Inc. offers this letter of support for the Arizona Rural Community Health Information Exchange (ARCHIE). Such services are integral to the success of this rural health safety net.

Cochise County is unusual in its geography and demographics. This is a sparsely populated rural area, with many miles between services (the County is the size of Rhode Island) and the agencies that provide them. For patients, access to health care requires determination and the ability to move from community to community. Everyday "glitches" such as records not being transferred or not being located, cause huge delays in the delivery of care.

This project is not designed to make things easier, it is designed to make them possible. That is a difficult concept for people who live in urban areas. Here, the power goes out on a nearly weekly basis. The back up generator and well are necessary just to keep the clinic operating. T1 lines have been scarce and the ability to utilize electronic data transfer has been difficult. The population tends to be less well than national averages due to the fragmented medical system.

CCHCI looks forward to the potential patient benefit of the ARCHIE project and urge your positive consideration of this proposal.

Sincerely,

Jennifer "Ginger" Ryan, MBA/Ph.D.
Chief Executive Officer

Jennifer 'Ginger' Ryan Clinic
1100 'F' Avenue
Douglas, Arizona 85607
520-364-3285 • fax 520-364-3378

Cliff Whetten Clinic
10566 Highway 191, PO Box 263
Elfrida, Arizona 85610
520-642-2222 • fax 520-642-3591

Bisbee Clinic
108 Arizona Street
Bisbee, Arizona 85603
520-432-3309 • fax 520-432-3717

# Cochise County Sub-Regional EMS Council

Margaret Hepburn, RN, MS
CEO, Sierra Vista Regional Health Center
300 El Camino Real
Sierra Vista 85635

April 20, 2007

Dear Ms. Hepburn,

Cochise County Emergency Medical Service Council (CCEMS) strongly supports the Arizona Rural Community Health Info Exchange [ARCHIE] project. Many of us provide services to the rural areas within Cochise County. Our EMS provides serve over 120,000 citizens, covering an area that is over 6,000 square miles in size with twenty-five EMS and Fire service providers. Our EMS communities are in great need of a telecommunications connectivity program.

This program will enable us to use a telemed system for education, transfer of patient information, records and data usage, consulting with physicians, receiving medical orders for patient care, and the possibility of video transfer of patients conditions in real-time to a level 1 trauma center. Our nearest level 1 facility is over an hour away by ground ambulances in many parts of the county. Additional we'll be able to link up with the Arizona Department of Homeland security for bioterrorism related emergencies, disasters, hazardous materials incidents, and other type of local, state, and federal emergencies.

CCEMS will contribute personnel, expertise, and project guidance to this project and will become a member of ARCHIE. This network will significantly enhance healthcare services in our rural communities by linking us to state and national medical education and research centers, the Arizona Telemedicine Program, and allowing us greater abilities to track disease outbreaks, as well as emergency and disaster efforts. Our patients will receive better quality health services and improved access to those services through the coordinated community efforts this connectivity affords.

We appreciate the leadership Sierra Vista Regional Health center has initiated through this project. CCEMS will continue to participate in ARCHIE and insure its sustained success.

Sincerely,

Bill Miller

William (Bill) Miller
CCEMS Chairperson
4817 Apache Ave.
Sierra Vista, AZ 85650

Southeast Arizona Medical Center
2174 W. Oak Ave. Douglas, AZ 85607 • phone 520.364.7931 • fax 520.364.2551
www.samcdouglas.org
Community Healthcare of Douglas

April 14, 2007

Margaret Hepburn, RN, MS
CEO, Sierra Vista Regional Health Center
300 El Camino Real
Sierra Vista 85635

Re: Memorandum of Agreement

Dear Ms. Hepburn,

Southeast Arizona Medical Center (SAMC) pledges it full support of the Arizona Rural Community Health Info Exchange [ARCHIE] project. The rural communities within our service areas greatly need the telecommunications connectivity this program will provide.

SAMC has been a significant user of "tele-health" services for four years. SAMC was the pilot site in partnership with the University Medical Center in Tucson in the development, funding and implementation of the Tele-trauma program. This program has been recognized through-out the world as being an innovative, life-saving use of technology. With addition financial support by Blue Cross, other rural hospitals through-out Arizona will have this service installed at their facilities in the near future. The closest level 1 trauma center is located in Tucson which is 120 miles away.

The University's tele-medicine program has been in place at SAMC since 2002. This program has been beneficial in providing specialist consults to patients minimizing their requirements to travel outside of our local community. In addition, tele-medicine allows local health care professions to maintain their skills through education and training opportunities by this delivery method. In addition, tele-radiology has been used by SAMC for the past three years. This service provides 24/7 access to radiologists, which otherwise would not be feasible for SAMC.

SAMC will contribute $5,000 to this project and will become a member of ARCHIE. This network will significantly enhance healthcare services in our rural communities by linking us to state and national medical education and research centers, the Arizona Telemedicine Program, and allowing us greater abilities to track disease outbreaks, as well as emergency and disaster efforts. Our patients will receive better quality health services and improved access to those services through the coordinated community efforts this connectivity affords.

We appreciate the leadership Sierra Vista Regional Health center has initiated through this project. SAMC will continue to participate in ARCHIE and insure its sustained success.

Sincerely,

Michael Carter
CEO

NCCH

NORTHERN COCHISE COMMUNITY HOSPITAL, INC.

April 23, 2007

Margaret Hepburn, RN, MS
CEO, Sierra Vista Regional Health Center
300 El Camino Real
Sierra Vista 85635

Memorandum of Agreement

Dear Margaret:

Northern Cochise Community Hospital supports the Arizona Rural Community Health Info Exchange (ARCHIE) project. The rural communities of Cochise County greatly need the telecommunications connectivity this program will provide.

The need to have sufficient bandwidth to provide the services a hospital is expected to provide grows daily. More and more of our normal business operations require us to utilize the internet. When Northern Cochise Community Hospital implemented its digital radiology program 3 years ago we needed to develop the necessary communications backbone to transmit our images to radiologist in other locations for interpretation. As technology advances the demand for faster connectivity is required. We are in the final phase of developing an electronic health record and to have that data accessible to other health care providers will require additional connectivity.

One of the challenges faced by a small rural health care facility is providing training for its staff. A majority of this training can be provided using the internet; however, this is another demand on our bandwidth, which is being used for patient care issues, and helping us operate our business. The development of a dedicated communication system in Cochise County will help hospitals meet this increasing demand for connectivity.

Northern Cochise Community Hospital will contribute $4,000, personnel, expertise, project guidance, sponsor conferences, previous experience, etc to this project. This network will significantly enhance healthcare services in our rural communities by linking us to state and national medical education and research centers, the Arizona Telemedicine Program, and allowing us greater abilities to track disease outbreaks, as well as emergency and disaster efforts. Our patients will receive better quality health services and improved access to those services through the coordinated community efforts this connectivity affords.

901 West Rex Allen Drive - Willcox, Arizona 85643 - (520) 384-3541 - Fax (520) 384-9212

We appreciate the leadership Sierra Vista Regional Health center has initiated through this project.

Sincerely,

Chris Cronberg
Chief Executive Officer

# Copper Queen Community Hospital

April 26, 20056

Margaret Hepburn, RN, MS
CEO, Sierra Vista Regional Health Center
300 El Camino Real
Sierra Vista 85635

Memorandum of Agreement

Dear Ms. Hepburn,

Copper Queen Community Hospital strongly supports the Arizona Rural Community Health Info Exchange [ARCHIE] project. Our rural communities greatly need the telecommunications connectivity this program will provide.

Our Douglas clinic is less than a mile from the border and 125 miles from the Tucson Level 1 Trauma Center. Because of bandwidth limitations we cannot avail ourselves of remote trauma services offered by the Arizona Telemedicine Program and must therefore evacuate trauma patients via helicopter regardless of the level of injury. Also, Dermatology is a necessary medical service for many patients in Arizona. Lack of providers and insurance requirements cause some of our Dermatology patients to travel as far as 240 miles to Phoenix for services. We have limited access to Radiologists. We need to send some of our studies to remote sites for reading and diagnosis. This will become a critical problem in the near future when local access to radiologists becomes unavailable and all of our readings must be done remotely. These services are graphic in nature, the bandwidth to provide all of these remote services pushes our requirements beyond our current standard T1 connectivity. Currently, we have the technology and experience to deliver some of these services to remote sites on a limited basis, but we are restricted by bandwidth limitations to deliver the level of quality and quantity of service that the communities we serve need,

Copper Queen Community Hospital will contribute $3,400 for the study to determine connectivity, our portion of the required 15% funds match in the grant, personnel, expertise, project guidance, sponsor conferences, previous experience, etc to this project and be a contributing member of ARCHIE. This network will significantly enhance healthcare services in our rural communities by linking us to state and national medical education and research centers, the Arizona Telemedicine Program, and allowing us greater abilities to track disease outbreaks, as well as emergency and disaster efforts. Our patients will receive better quality health services and improved access to those services through the coordinated community efforts this connectivity affords.

**101 Cole Avenue • Bisbee, Arizona 85603 • (520) 432-5383**

# Copper Queen Community Hospital

We appreciate the leadership Sierra Vista Regional Health center has initiated through this project. Copper Queen Community Hospital will continue to participate in ARCHIE and insure its sustained success.

Best regards,

James J. Dickson
Administrator/CEO

101 Cole Avenue • Bisbee, Arizona 85603 • (520) 432-5383

CATHOLIC COMMUNITY SERVICES in SOUTHEASTERN ARIZONA

P.O. Box 1777
Bisbee, Arizona 85603
(520) 432-2285
Fax: (520) 432-2009



April 26, 2007

Margaret Hepburn, RN, MS
CEO, Sierra Vista Regional Health Center
300 El Camino Real
Sierra Vista 85635

Memorandum of Agreement

Dear Ms. Hepburn,

Catholic Community Services in Southeastern Arizona strongly supports the Arizona Rural Community Health Info Exchange [ARCHIE] project. Our rural communities greatly need the telecommunications connectivity this program will provide.

Catholic Community Services provides a variety of services in Cochise County Arizona, an area of over 6000 square miles. Our home health program serves 15 communities with branch offices in Bisbee, Benson and Sierra Vista. Our clients are not located in population centers. The travel time to the only Level I Trauma center for our clients is in excess of one hour and for the majority of clients over two hours. Our clients receive a wide variety of specialized services in communities across the county. However, this rural area presents a unique challenge to access. Home Health services for these client represents a bridge to comprehensive health care, which enhances communication among providers of various types of care in areas that are at geographically significant distances from one another.

The ability to access health care data in a project such as ARCHIE increases patient safety, reduces costs by eliminating duplication of efforts, and expands access to care dramatically. Readily available health information across the continuum of care can reduce the time interval between diagnosis and treatment which can reduce certain costs of treatment and improve treatment outcomes.

Catholic Community Services in Southeastern Arizona will provide to this project about $12,000.00 in kind for personnel, expertise, project guidance and/or oversight, office space and office support services.

We want to become a member of ARCHIE in phase 2 planning. This network will significantly enhance healthcare services in our rural communities by linking us to state and national medical education and research centers, the Arizona Telemedicine Program and allowing us greater ability to track disease outbreaks, as well as emergency and disaster efforts. Our patients will receive better quality health services and improved access to those services through the coordinated community efforts this connectivity affords.

We appreciate the leadership Sierra Vista Regional Health center has initiated through this project. Catholic Community Services in Southeastern Arizona will continue to participate in ARCHIE and ensure its sustained success.

Sincerely,

Charles J. Fisher, M. Div., M. S. W.
Executive Director

AHCCCS

*Our first care is your health care*
ARIZONA HEALTH CARE COST CONTAINMENT SYSTEM

*Janet Napolitano*, Governor
*Anthony D. Rodgers*, Director

*801 E. Jefferson, Phoenix AZ 85034*
*PO Box 25520, Phoenix AZ 85002*
*Phone 602-417-4000*
*www.azahcccs.gov*

April 30, 2007

Margaret Hepburn, RN, MS
CEO, Sierra Vista Regional Health Center
300 El Camino Real
Sierra Vista, AZ 85635

Re: Memorandum of Agreement: Arizona Rural Community Health Information Exchange

Dear Ms. Hepburn:

The Arizona Health Care Cost Containment System (AHCCCS), Arizona's Medicaid program, strongly supports the Arizona Rural Community Health Information Exchange [ARCHIE] project. Southeastern Arizona's rural communities need the telecommunications connectivity that ARCHIE will provide.

As the state's Medicaid Program, AHCCCS provides health care coverage for over 1 million Arizonans, which includes acute and long term care coverage for low-income adults and children, and small businesses. In Cochise County, AHCCCS provides coverage for 24,618 residents, about 19% of the population. Our mission is to "*Reach across Arizona to provide comprehensive, quality health care for those in need.*" In striving to achieve this mission, we recognize the importance of developing partnerships, adopting innovative strategies to better share medical and administrative data, and designing systems that improve the coordination of care and medical quality. ARCHIE touches upon all three strategies: develop strong partnerships, design systems to promote coordination, and adopt innovation.

In January 2007, AHCCCS was awarded a Medicaid Transformation Grant to develop and implement a web-based electronic health record and health information exchange (HIE) utility. The goal of this project is to provide all Medicaid providers instant access to beneficiaries' health records via electronic connection at the point of service. The electronic health record (EHR) available through this HIE utility will include patient demographics and eligibility information, patient problem lists, medications, lab tests orders/results, radiological results and images, inpatient discharge summaries, and clinical notes. We anticipate that this HIE utility will transform the AHCCCS Medicaid program and the patient care process. Providing timely patient health information at the point of service will improve the quality, efficiency and effectiveness of Arizona's Medicaid program. Real time health information access will result in reduction of medical errors, reduction of redundant testing and procedures, better coordination of care for patients with chronic diseases, increased preventive interventions, reduction in the inappropriate use of the emergency room, and lower administrative costs. When aggregated, these benefits will save significant state and federal taxpayer dollars (in Medicaid, SCHIP, and IHS) as well as beneficiary and provider frustration.

As AHCCCS moves forward to enable provider accessibility to health records via electronic connection, we will need strong local partnerships to be successful. Cochise County providers will need telecommunications connectivity and will benefit from a shared culture that promotes information exchange. We all need to work together to achieve systems that are well designed and integrated. Experiences from other regions are demonstrating that medical consumers will benefit from better coordinated, more efficient, and safer medical care.

An electronic information infrastructure requires both human and technology resources to design, develop, manage, and sustain. AHCCCS will support the development of ARCHIE through ongoing technical and organizational support. We agree to designate an AHCCCS representative to participate during the design and implementation phases and we will work with you to identify sources of long-term sustainability. We expect that ARCHIE will significantly enhance healthcare services by linking local providers to state and national medical education and research centers, the Arizona Telemedicine Program, and allow members to track disease outbreaks, as well as emergency and disaster efforts. Cochise County residents will receive better quality health services and improved access to health care.

We appreciate the leadership that Sierra Vista Regional Health Center has initiated during the planning phases and look forward to working through an array of regional partnerships to insure ARCHIE's sustained success.

Sincerely,

Anthony D. Rodgers
Director


Southern Arizona Health Information Exchange

April 27, 2007

Margaret Hepburn, RN, MS
CEO, Sierra Vista Regional Health Center
300 El Camino Real
Sierra Vista 85635

Dear Ms Hepburn:

This letter is to extend our support to the submission that Arizona Rural Community Health Information Exchange (ARCHIE) is making in response to the RFP issued by the Federal Communications Commission.

SAHIE's mission -- *To improve the access, quality and safety of healthcare while reducing or stabilizing costs in Southern Arizona through the deployment of regional and self-sustainable health information exchange* -- makes the rural community of Southern Arizona a very important part of what we are setting out to do. In order to provide current medical information about any patient in Southern Arizona at the point of medical decision making, the development of a strong collaborative within all healthcare components in the region is both basic and critical.

We are all well aware that electronic connectivity in our rural areas is one of the major challenges facing the implementation of SAHIE and of ARCHIE. We are confident that your project proposal will greatly facilitate the removal of this hurdle.

As you know, SAHIE looks forward to working with ARCHIE in completing the integration of HIE in Southern Arizona, and in serving as the backbone between ARCHIE and the rest of the community.

Sincerely,

K. Bharathan
SAHIE Project Lead

# SouthEastern Arizona
# Behavioral Health Services, Inc.

May 2, 2007

Margaret Hepburn, RN, MS
CEO, Sierra Vista Regional Health Center
300 El Camino Real
Sierra Vista, AZ 85635

Dear Ms. Hepburn,

SouthEastern Arizona Behavioral Health Services, Inc. (SEABHS) strongly supports the Arizona Rural Community Health Info Exchange [ARCHIE] project. Our rural communities greatly need the telecommunications connectivity this program will provide.

SEABHS is a community-based behavioral health provider organization covering the four rural counties in Southwestern and Southeastern Arizona (Santa Cruz, Cochise, Graham and Greenlee Counties). SEABHS operates 8 outpatient clinics, a Level I Acute Care Psychiatric Health Facility, Level II Substance Abuse facility, multiple residential facilities and housing.

SEABHS is looking forward to the ability to link with the various rural hospitals in our service area and first responders in order to better coordinate behavioral, crisis/emergency services and acute care health needs for the clients we serve.

SEABHS currently connects all of its facilities via a T-1 network that supports data, communications and telemedicine. By expanding our connectivity with ARCHIE, we will have additional resources and communication with other community partners to better serve our clients.

SEABHS will contribute to this project financing, staffing, expertise and will become a member of ARCHIE. This network will significantly enhance healthcare services in our rural communities by linking us to state and national medical education and research centers, the Arizona Telemedicine Program, and allowing us greater abilities to track disease outbreaks, as well as emergency and disaster efforts. Our patients will receive better quality health services and improved access to those services through the coordinated community efforts this connectivity affords.

We appreciate the leadership Sierra Vista Regional Health center has initiated through this project. SEABHS will continue to participate in ARCHIE and insure its sustained success.

Sincerely,

Dana S. Johnson

Dana S. Johnson, ACSW, LCSW
Chief Executive Officer

Fax (520) 586-0116
Phone (520) 586-0800
Benson Administration Office

SEABHS

P.O. Box 2161
611 W. Union Street
Benson, Arizona 85602